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10/731,018	12/10/2003	Takayuki Iwasa	25873	5199

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EXAMINER

NGUYEN, HOAN C

ART UNIT PAPER NUMBER

2871

DATE MAILED: 07/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/731,018

Applicant(s)

IWASA, TAKAYUKI

Examiner

HOAN C. NGUYEN

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-15 is/are pending in the application.
4a) Of the above claim(s) 4,5 and 11-15 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 6-10 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Species I (Fig. 4, claims 6-10) in the reply filed on 5/16/2006 is acknowledged.

Claims 4-5 and 11-15 are withdrawn.

Response to Amendment

Applicant's arguments with respect to new claims 6-10 based on the Response filed on 1/24/2006 have been considered but are moot in view of the same ground(s) of rejection. Therefore, this is Final action.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 6, 7 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 6 cites "wherein the second light blocking 33 are electrical connected to the first (?) via holes and cover the second openings of the first light blocking metal film 28". Applicants need to clarify what is "the first (?) via holes"?

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Examiner interpretes "the first" as "the first light blocking metal film 28" provided in the elected species that reads on Figure 4.

- Claim 6 also cites "the reflective pixel electrodes ...through first via holes, the first light blocking metal films through second via holes". Examiner interpretes as "the reflective pixel electrodes and ... through first holes, the first light blocking metal films through second holes".
- Claim 7 cites "insulating films 32 formed between the first light blocking metal films 28 and the second light blocking metal films 33, wherein the insulating films serve as second storage capacitors". The first light blocking metal films 28 and the second light blocking metal films 33 are electrical connected as claim 6 cited; therefore, (1) the insulating films between them cannot serve as second storage capacitors since both the first light blocking metal films 28 and the second light blocking metal films 33 have same electrical potential or there is no voltage across them; or (2) if the insulating films may serve as second storage capacitors, the second light blocking metal film 33 cannot be electrically connected to the normal metal films 26 through second holes Via3.
- Claim 10 cites "the second light blocking metal films are made selected from the group consisting of TiN, Ti and layered TiN/Ti. However, TiN is not metal material."

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 6-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fumitoshi et al. (JP2002-357820) provided by IDS.

In regard to claim 6, Fumitoshi et al. disclose (Figs. 7-8, 13 and 15) a reflective liquid crystal display having pixels arranged in a matrix comprising:

- a semiconductor substrate 1;
- a transparent substrate 61 that transmits light;
- switching elements Tr formed for the respective pixels on the semiconductor substrate and electrically isolated from one another;
- first storage capacitors Cp provided for the respective switching elements and electrically isolated from one another,
- reflective pixel electrodes 41 provided for the respective pixels and having first openings 43 therebetween to be electrically isolated from one another;
- a transparent counter electrode formed on a reverse of the transparent substrate to face the reflective pixel electrodes,
- liquid crystals 51 sealed between the reflective pixel electrodes and the transparent counter electrode;

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- first light blocking metal films 31 formed between the semiconductor substrate and the reflective pixel electrodes for the respective pixels and having second openings 30 therebetween to be electrically isolated from one another, wherein the second openings do not face the first openings, and the first light blocking metal films block at least part of light which is part of light which has transmitted through the transparent substrate and which has intruded into the first light blocking metal films side through the first openings;
- normal metal films 23 formed between the semiconductor substrate and the reflective pixel electrodes for the respective pixels and having third openings 24 therebetween to be electrically isolated from one another, each normal metal film being electrically connected to a switching element and a first storage capacitor corresponding thereto; and
- second light blocking metal films 38 formed between the semiconductor substrate and the reflective pixel electrodes for the respective pixels and electrically isolated from one another,

wherein

- the reflective pixel electrodes 41 and the first light blocking metal films 31 are electrically connected to each other through first holes 40 ; the first light blocking metal films 31 and the normal metal films 23 are electrically connected to each other through second holes 27; and accordingly each reflective pixel electrode is electrically connected to the switching element and the first storage capacitor corresponding thereto, and

- the second light blocking metal films 38 are covering the first light blocking metal films 35 and cover the second openings 30 of the first light blocking metal films in order to prevent the light which has intruded into the first light blocking metal films side through the first openings from reaching the switching elements through the second openings.

Claim 7:

- insulating films 37 formed between the first light blocking metal films and the second light blocking metal films, wherein the insulating films serve as second storage capacitors.

Claim 8:

- thickness of the insulating films is set to be 20-50nm that is thinner than 400nm.

Claim 10:

- the second light blocking metal films are made layered TiN/Ti.

However, in Figures 7-8, Fumitoshi et al. fail to disclose forming the second light blocking metal films 38 electrically connected to the first light blocking metal films 35 via holes 40. The second light blocking metal film 38 having opening 38a, then light is leaked between the undersurface the second light blocking metal film 38 and interlayer insulating film 35 and get to the switching elements as Fig. 7b shown.

In Figure 14, Fumitoshi et al. disclose the light shielding film 38' contacted to holes 40; wherein the light shield film 38' can be made of insulating material with color

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pigment to prevent light leakage as Fig. 7b shown. Therefore, the light shield 38' can be made of conductive metal (with single step sputtering method that does not need the color pigment) contacted to hole 40 or electrically connected to the first light blocking metal films 35 via holes 40.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflective liquid crystal display device as Figures 7-8 shown with forming the second light blocking metal films 38 electrically connected to the first light blocking metal films 35 via holes 40 for preventing light leakage to the switching element, as taught by Fumitoshi et al.

2. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fumitoshi et al. (JP2002-357820) provided by IDS as applied to claims 6-8 and 10 and in further view of Colgan et al. (US6781650B1).

Fumitoshi et al. fail to disclose the feature of claim 9.

Colgan et al. teach forming the insulating films are made of silicon nitride for providing high capacitance due to their large dielectric constant.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflective liquid crystal display device as Fumitoshi et al. disclosed with forming the insulating films are made of silicon

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nitride for providing high capacitance due to their large dielectric constant as Colgan et al. taught (col. 8 lines 1-24).

Conclusion

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571) 272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

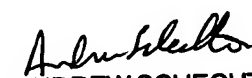
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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ANDREW SCHECHTER
PRIMARY EXAMINER